AN EXAMINATION OF SECTORAL MOBILITY IN THE UK LABOUR FORCE

Wm. D. Beaney

School of the Built Environment, Northumbria University, Newcastle upon Tyne, NE1 8ST, UK

Sectoral movements are more volatile than residential migration. Residential migrations, even those over a relatively short distance need considerable time for movers to analyze, weigh the costs and benefits, and then further time to plan and execute the move. Whereas sectoral labour movements can be undertaken quite quickly and are thus capable of responding with greater immediacy to economic pulses. This paper describes a comparison of residential and sectoral labour movement between 1989 and 2005 based upon UK Labour Force Survey data. The dataset extracted provides those labour counts which had moved residence within the past year and also those who had moved sector within the past year. The sectoral transfer data shows much greater volatility during the 1989- 1995 'Economic Shock'. An examination by correlation matrix reveals the unique degree to which the construction industry is connected (in terms of sectoral transfer) to the other industry sectors.

Keywords: **c**onstruction sector, correlations, labour mobility, residential migration, sectoral migration

INTRODUCTION

A considerable volume of recent construction research has focused upon the labour and skills shortages found to be affecting construction productivity and the actions necessary to redress these. However observations of the fact of labour and skill shortages need also to be supported by information as to how construction labour mobility occurs within the economy. This poses questions not only for labour mobility in a physical / residential sense, but also sectorally in terms of how other industry sectors take labour from and supply labour to construction; and whether the construction sector performs differently in this respect to the other industry sectors.

LABOUR MIGRATION THEORY

Economics based research into migration is a complex area of investigation and must not only be distinguished from that of early anthropological studies but must also set aside those other exogenous influences upon mass movement (slavery; political expulsion/annexation; human conflict, to give some extreme examples). Whilst these will always have an effect upon migration, nevertheless it is the direct effect of economic drivers and the pursuit of personal betterment which takes primacy, (Ravenstein 1889, p286), and with which this research is concerned.

Authoritative work in migration theory development is provided by Everett S. Lee in 1966. This work supported the idea of "push - pull" theories by considering a range of positive and negative factors associated with origin and destination choices, and

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adding the idea of sets of intervening obstacles situated both geographically (*and metaphorically*) between them.

Lee's observations include some great insights into how migration occurs and thus some distinctions which should be adopted. He looked upon migration as being most meaningful when it involved a permanent or semi-permanent change of residence. This draws out important distinctions for those migrations which are temporary (e.g. exploiting the connections between currently available fast/cheap transportation methods; and perhaps larger or more affordable property in rural locations. Such considerations may be seen in the choices and actions of those who daily travel large distances for employment reasons, or perhaps relocate to a small city flat during weekdays and return to a main rural residence at weekends. From an economics perspective; residential migration needs to be considered somewhat differently; i.e. on the basis of rational decision-making directed towards obtaining betterment. In that sense Lee proposed that it must be something which exposes migrants to the full effect of the entire mix of benefits and losses arising in the move to new locations, together with all the information uncertainties in the assessment of that mix, and which exist in the pre-move state.

Lee also commented upon how industrialization and its effects upon settlement in towns and cities is a great creator of diversity, thus creating change processes and opening up an economy to new opportunities. This is a more dynamic view of migration showing how a resulting diversity in populations would increase migration yet further. Lee felt that this diversity was an economically very positive thing and that it was incumbent upon a modern civilization to "inaugurate other kinds of diversity among people"; and by this he was specifically referring to vocational diversity and labour specialization; both of which would be brought about by prolonged education.

Lee supported this positive view of migration by considering that it seemed to tie-in with a high rate of economic progress in a country. Thus he felt an ideal would be arrived at where, a high rate of progress may entail a population which is

> *"continually in a state of flux, responding quickly to new opportunities and reacting swiftly to diminishing opportunities," (Lee 1966, p54).*

Lee also felt that technology also played a role in removing or diluting the number and effect of intervening obstacles. Where communication becomes easier, and transportation cheaper and faster, Lee commented that even if there were no change in the "balance of factors", technology alone should increase the volume of migration (Lee 1966, p54).

However technological advancement has now progressed beyond simple manufacturing and the enhancement of physical capabilities to the creation of ideas and more innovative processes; and the view that the volume of migration tends to increase with time may no longer be supportable.

Other theories have bearing upon this. Samuel Stouffer (1940) proposed a mathematical mode; of "intervening opportunities" later known as Gravitational Migration, which was based upon the availability of suitably priced residential accommodation. This and other work in the studies of urbanization, suburbanization and the growth of cities (Champion 2001) give witness to a growing complexity in the field of migration studies.

Stouffers work still resonates within more recent work on populations in transition by Gedik (2005), distinguishing the work of the prolific author Wilbur Zelinsky and his derivation of an "Hypothesis of the Mobility Transition" in 1971; showing that migration passes through a number of sequentially ordered phases, running from the Pre-modern Traditional Migration, largely associated with the minimal movements in agrarian society, to, the current Super Advanced Migration situation, dominated by "interurban and intraurban types" and with technology thought to reduce the need for migration generally.

Gedik's work is largely directed at distinguishing Zelinsky for developed and developing nations, comparing Japan and Turkey, but hypothesizes that in the longer term; for both migration rates and migration numbers, both urban to urban as well as rural to urban, migration eventually decreases, (Gedik 2005, p3)

This seems borne out by Dixon (2003, p193) who in an analysis of the UK migration using spring quarter snapshots of the UK labour Force Survey, examined the general level of migration. Her research shows inter alia, that:

1. Over the period 1992 to 2002 (her Fig1, refers) the total of "all-moves" migration within GB is at a comparatively low and stable figure of about 11%,
2. That, for the same period, the element of interregional migration involving migration over greater distances, is at a much lower but also similarly stable figure of approximately 2%.
3. The range of movement about these averages is quite small.

Dixon (2003, p194) in an analysis of the reasons for moving and where this could be classified by distance; discovered that "job related" moves were not the dominant inspiration for residential migration. Using ONS estimates of the British Household Panel Survey for the period 1991 to 2000, she found that job related motivations were at a measure of only 12.6% of all moves, and that this was considerably less important than housing considerations (at 45.3%). A similar subordination of job related moves was noticeable in the shorter range migrations occurring within local authorities and within regions. It is only when longer range moves between regions were considered that job related moves became more important, but also noting that other drivers seem to create a complex set of motivations for these.

Greenaway *et al.* (1999) have undertaken extensive research into the above and have advocated the study of sectoral transfers as the initial starting point, rather than the usual investigation of regional mobility. They show not only the very low level of net flow, but also point out it's subordination to the gross flows between sectors. They hypothesize that this has ramifications for industrial response to economic shocks, in that flows within employment are secondary to flows between employment and unemployment; or presumably also from new entrants to the workforce.

This was later developed by Greenaway *et al.* (2000, p32), in a policy oriented document where they again discuss the issue of sectoral shocks, sectoral structural change, and aspects of measuring labour force response; and especially the preference for using net sectoral transfer data. They argue that "gross flows are not in themselves indicative of the amount of sectoral reallocation occurring in the economy, because a sectoral shock can be accommodated by any amount of gross flows."

Further consideration of the complexity of labour mobility, is given by Monastiriotis (2003, p14), who, referring also to the structural break in the late 1980s produced an

extraordinarily useful and very comprehensive table of the many variables which can be used to measure flexibility and identifies their sources and the factors (of production) to which they can be attached.

Further need for research in this area is identified by Ruiz (2004, p1), where in a comment upon economic connections, she comments as to the lack of "clear evidence of whether skills shortages in *(construction and metal trades)* occupations maybe long term and linked to structural changes in the economy, or short term, and linked to economic business cycles."

Returning to Lee's work; he also identified the need (in the prospective migrant) to overcome a "natural inertia" which he felt would always exist. This may be seen as an invisible do-nothing / stayer / waiting decision which can be usefully regarded as a baseline measure of immobility and against which migration rates could be measured.

To summarise; if in recent years the level of UK residential migration is low, predominantly short ranging (i.e. within regions and not between regions), and only a third of such movers are motivated by economic considerations (Dixon 2003); then Gedik's hypothesis may be substantially observed over a longer period of time bridging the entire period of the last UK economic shock. In which case, if economic progress is still continuing and also if that it is dependant upon a state of labour flux; sectoral migration may be assuming a relatively greater and currently more meaningful importance. Given the different labour productivity rates of different industry sectors, and the different rewards to labour associated with them, labour mobility should be more evident between some industry sectors than others. The current work aims to address these issues.

METHODOLOGY AND DATA ASSEMBLY

Data is initially assembled by ESDS data downloads and used to provide the following categories of data:

Following Dixon, this research uses the Spring Quarter snapshots of the LFS data collection. and presents measures of the residential migration by industry sector for Labour which has moved within the past year. Similarly, and also following Greenaway, the treatment of sectoral migration has been undertaken to obtain the net sectoral flows between the industry sectors. All data is taken from two questions, i.e.

1. What industry sector are you employed in now? And
2. Which industry sector were you employed in one year ago?

It thus becomes possible to turn this data to measure two different movements:

1. In-mig.: Transfers to a sector now, from other sectors (1year ago).
2. Out-mig.: Transfers from same sector (1year ago), to other sectors now.

This will still produce the same all-sector annual totals, but the net transfer data for each sector will be different, and showing reflected data where the net loss from say Sector X to Sector Y will match the net gain to Sector Y from Sector X.

For the sake of consistency over the adopted period the SIC (80) structures have been used.

The following Table 1. summarizes the data counts for each year extracted from the relevant years adopted (1989 to 2005 inclusive). Whilst the primary aim has been to

capture sufficient data to indicate stability in the data it has inevitably been necessary to limit the volume of data to single quarter snapshots taken at regular (spring quarter) intervals, following Dixon, but add breadth by extending historically over the period of the last UK economic shock. The total data count is provided below.

As the focus is entirely on unforced migration, insofar as this is a rational and freely chosen action; for both forms of migration the measures adopted are specifically from people who are within employment. No attempt has been made to include residential or sectoral moves of the unemployed returning to the workforce, or those who are displaced to unemployment. Similarly new entrants to the workforce and retirees are also excluded:

Table 1: LFS Dataset adopted. Spring Quarters 1989 – 2005

Summaries of individual counts and their expression as percentages of the entire quarterly sample taken.

(NB The 1990 data is too qualified and thus excluded from Sectoral Migration)

Moves = residential moves within the past year

Transfers = individuals switching to different industry groups / sectors.

Spring Quarters	Residential Migration Counts of individuals included	Moves	%	Sectoral Migration Counts of individuals included	Transfers	%
2005	56,986	5,395	9.47	47,263	2,215	4.69
2004	57,672	5,297	9.18	48,594	2,335	4.81
2003	60,005	6,079	10.13	50,994	2,516	4.93
2002	62,454	6,500	10.41	54,024	3,008	5.57
2001	61,720	6,064	9.83	52,843	3,093	5.85
2000	63,264	6,682	10.56	54,352	3,027	5.57
1999	64,744	6,564	10.14	55,930	3,032	5.42
1998	65,025	6,796	10.45	56,700	3,184	5.62
1997	65,975	6,892	10.45	56,993	2,839	4.98
1996	63,721	5,786	9.08	57,921	2,879	4.97
1995	64,583	6,033	9.34	58,396	2,729	4.67
1994	154,108	15,347	9.96	68,706	9,097	13.24
1993	157,073	14,813	9.43	70,403	9,339	13.26
1992	154,903	14,818	9.57	70,732	10,108	14.29
1991	158,385	15,219	9.61	70,266	9,036	12.86
1990	Not used	Not used	10.04	Not used	Not used	Not used
1989	165,589	18,040	10.89	74,473	10,083	13.54
Total	**1,476,207**	**146,325**	**9.91**	**948,590**	**78,518**	**8.28**

The following preliminary observations are offered from Figures 1 and 2.

Residential migration (Fig. 1)

1. The average level of residential migration across all industry sectors for the UK is 9.91%.
2. This is further underpinned by a very high level of stability, (the economic shocks of the late 80s and early 90s notwithstanding). The range statement for the residential movement in any given year is from a low of 9.08% of sample, in 1996, to a high of 10.45% in 1997 and 1998.
3. Not all industrial sectors exhibit the same residential migration pattern. Agriculture etc shows the lowest effect here with an average of 5.73% of employees within the sample undertaking a residential move. Whilst at the other end of the scale; banking, finance and business services shows a 12.1% effect. A simple interpretation at this point would reach for an explanation in terms of the manner in which agricultural, forestry and fishing work may necessitate a stronger connection to land than may be the case for other forms of employment.
4. All industry sectors demonstrate both low and stable residential migration.

The above accords well with Dixon (2003), who's figure of total migration within the UK being at a comparatively low and stable figure of about 11%, is only marginally different for its different dataset.

Sectoral migration (Fig. 2)**:**

These are much more interesting. A simple examination of the dataset for sectoral in-migration and out-migration transfers (not shown), confirms Greenaway in finding that gross flows dominate net flows. However Fig.2) shows more clearly how some sectors show very different sectoral migration response to economic shock; and a notably marked transition for the construction sector where the period 1995 to 2005 is identified as one of the most quiet compared to the more violent net sectoral gains and losses of the 1989 to 1994 period.

Table 2. Transition in average annual net sectoral migrations percentages.

SIC (80)	**Average Annual Net sectoral transfer % 1989 - 1994**	**sd %**	**Average Annual Net sectoral transfer % 1995 - 2005**	**sd %**	**sd % diff.**
0 Agriculture, Forestry, Fishing	5.01	3.35	-2.49	1.62	1.73
1 Energy and Water Supply	-2.98	2.89	-1.10	2.47	0.42
2 Minerals, Ores, Metals, Chemicals	-0.35	2.80	-1.07	1.25	1.55
3 Metal goods, Engineering, Vehicles	0.60	2.65	-0.71	1.36	1.30
4 Other Manufacturing Industries	1.72	3.22	-1.67	1.12	2.11
5 Construction	0.35	6.00	0.87	0.81	**5.19**
6 Distribution, Hotels & Catering Repairs	8.43	2.95	-1.86	0.66	2.29
7 Transport and Communication	3.56	2.55	1.00	1.03	1.52
8 Banking, Financial & Business Services	5.84	2.41	1.53	0.91	1.49
9 Other Services	6.69	2.36	0.84	0.50	1.85

Whilst it may be interesting to examine the UK government policies and labour macroeconomics in operation surrounding the 1995 transition, which is beyond the scope of this paper; what interests is the rate of transition and the possibility that their may be structural differences to construction labour markets before and after 1995.

These initial observations serve as justification for the arguments that residential migration has become low and steady and that sectoral transfers have also recently fallen into a quiet period. However, in order to examine the deeper employment interaction between the sectors, a correlation matrix is prepared, See Table 3.

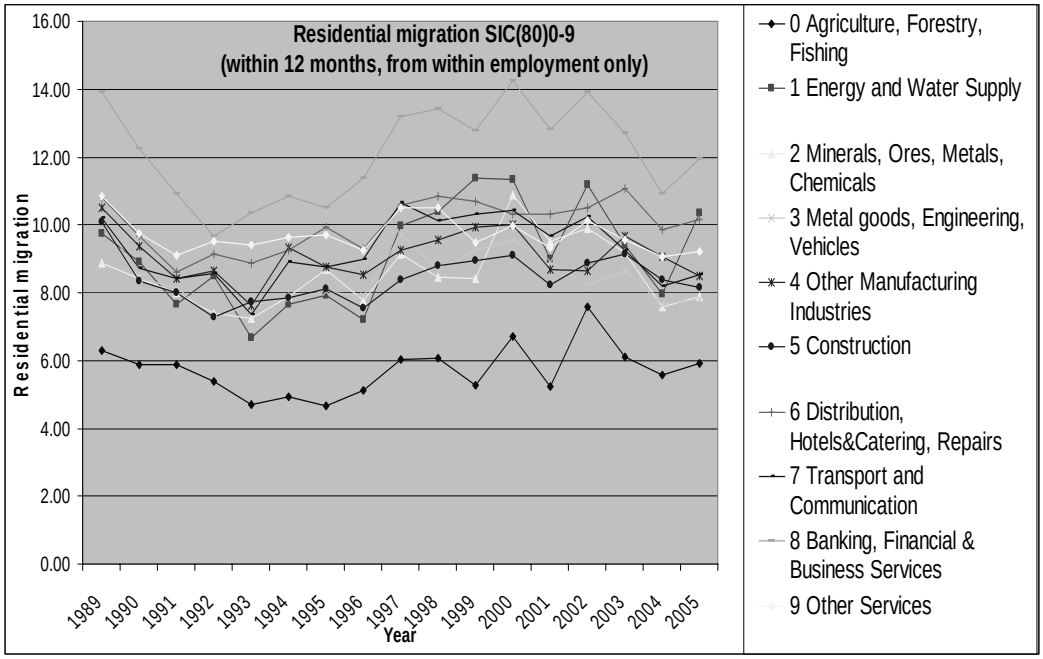

Figure 1: Residential migration as percentages of industry sector stayers. For movements within 12 months. From within employment only. Source: LFS

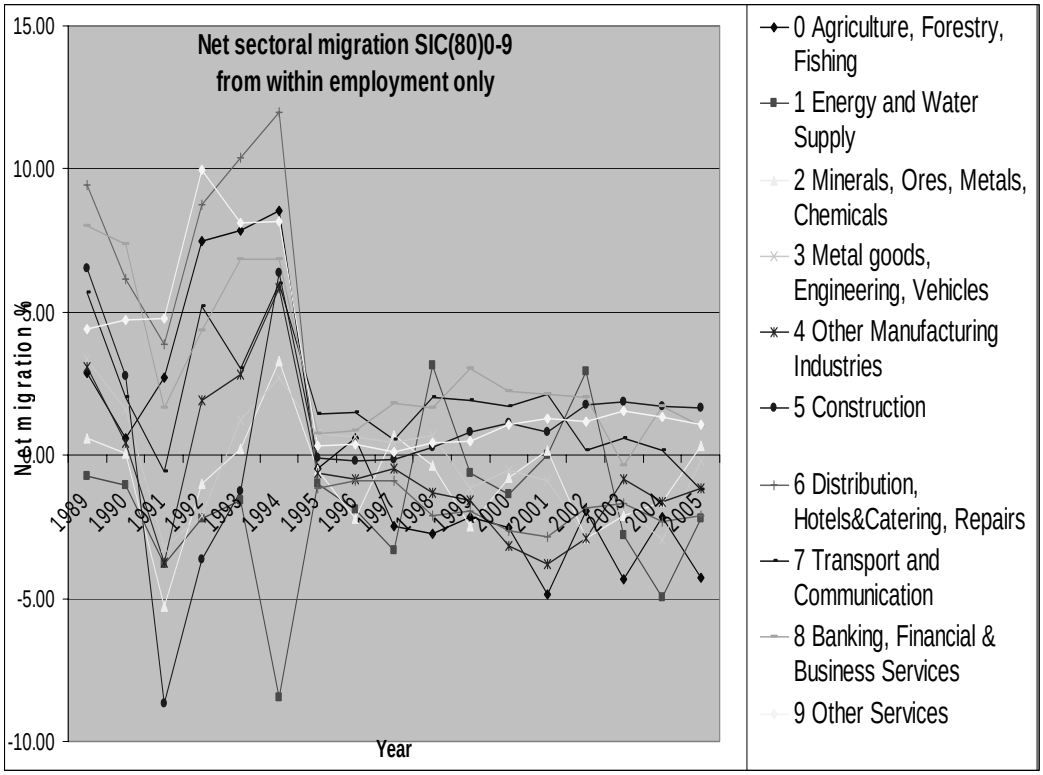

Figure 2: Net Sectoral migration as percentages of industry sector stayers. From within employment only. Source: LFS

Correlations

		Agric	Energy	Mining	Metalgoods	OtherManufac	Construct	Distrib	Transport	Banking	OtherService
Agric	Pearson Correla	1	.244	.264	.238	.745*	.363	.562	-.079	-.136	-.329
	Sig. (2-tailed)	.	.497	.462	.507	.013	.303	.091	.827	.707	.353
	N	10	10	10	10	10	10	10	10	10	10
Energy	Pearson Correla	.244	1	.957**	.907**	.741*	.851**	.774**	.755*	.741*	.648*
	Sig. (2-tailed)	.497	.	.000	.000	.014	.002	.009	.012	.014	.043
	N	10	10	10	10	10	10	10	10	10	10
Mining	Pearson Correla	.264	.957**	1	.823**	.762*	.805**	.808**	.698*	.704*	.553
	Sig. (2-tailed)	.462	.000	.	.003	.010	.005	.005	.025	.023	.097
	N	10	10	10	10	10	10	10	10	10	10
Metalgoods	Pearson Correla	.238	.907**	.823**	1	.751*	.948**	.815**	.804**	.714*	.586
	Sig. (2-tailed)	.507	.000	.003	.	.012	.000	.004	.005	.020	.075
	N	10	10	10	10	10	10	10	10	10	10
OtherManuf	Pearson Correla	.745*	.741*	.762*	.751*	1	.803**	.957**	.439	.400	.166
	Sig. (2-tailed)	.013	.014	.010	.012	.	.005	.000	.204	.253	.647
	N	10	10	10	10	10	10	10	10	10	10
Construct	Pearson Correla	.363	.851**	.805**	.948**	.803**	1	.871**	.832**	.720*	.526
	Sig. (2-tailed)	.303	.002	.005	.000	.005	.	.001	.003	.019	.118
	N	10	10	10	10	10	10	10	10	10	10
Distrib	Pearson Correla	.562	.774**	.808**	.815**	.957**	.871**	1	.580	.529	.293
	Sig. (2-tailed)	.091	.009	.005	.004	.000	.001	.	.079	.116	.412
	N	10	10	10	10	10	10	10	10	10	10
Transport	Pearson Correla	-.079	.755*	.698*	.804**	.439	.832**	.580	1	.960**	.866**
	Sig. (2-tailed)	.827	.012	.025	.005	.204	.003	.079	.	.000	.001
	N	10	10	10	10	10	10	10	10	10	10
Banking	Pearson Correla	-.136	.741*	.704*	.714*	.400	.720*	.529	.960**	1	.932**
	Sig. (2-tailed)	.707	.014	.023	.020	.253	.019	.116	.000	.	.000
	N	10	10	10	10	10	10	10	10	10	10
OtherServic	Pearson Correla	-.329	.648*	.553	.586	.166	.526	.293	.866**	.932**	1
	Sig. (2-tailed)	.353	.043	.097	.075	.647	.118	.412	.001	.000	.
	N	10	10	10	10	10	10	10	10	10	10

*.Correlation is significant at the 0.05 level (2-tailed).

**.Correlation is significant at the 0.01 level (2-tailed).

Table 3: Simple correlations of net sector to sector transfers. All years, 1989-2005, (excluding 1990). Based upon actual worker counts used for Fig. 2. From within employment only. Source LFS

CONCLUSIONS

The above Table 3. of Correlations and their corresponding p values, is based upon the entire dataset of net sectoral transfers for each year between 1989 and 2005 (excluding 1990). This was then processed to obtain a set of pair-wise correlations of net labour transfers between any single industry sector and all of the other UK industry sectors over the survey period.

The Correlation matrix is thus a 10 x 10 grid of explanatory relationships, where any given correlation when squared provides a percentage measure of the agreement between its two contributing variables.

Table 4. Ranked sectoral transference (summarised from Table 3,)

Ranked correlations of sectoral transfers 1 = most connected to other sectors.	Industry sector SIC (80).	Average of correlations with other sectors.	Significance count: No. of strong (cut-off *r* = 0.8) and stat. sig. correlations.
1	05 Construction	0.75	6
2	01 Energy & water	0.74	3
3	03 Metal goods etc.	0.73	5
4	02 Mining etc.	0.71	4
5	06 Distribution etc.	0.69	4
6	07 Transport etc.	0.65	4
7	04 Other manufacturing	0.64	2
8	08 Banking etc.	0.62	2
9	09 Other services	0.47	2
10	00 Agriculture etc.	0.21	0

The construction sector demonstrates the highest level of participation in labour mobility in terms of it's of labour connectivity to other industry sectors.

Further future examination to this may offer explanation focused upon:

1. The extent to which matching of both skills sets and skill levels exists between construction and it's partner sectors; and thus the extent to which construction sector labour needs and construction labour capabilities signal a ready adoption across many sectors.
2. The extent to which the effects of the last recession may have produced a construction labour group which may be more predisposed to sectoral movement.
3. The extent to which the often reported fragmentation of the construction sector, and its long and wide supply chains, may provide to the labour market greater visibility of the possibilities of sectoral transfer and the economic advantages which may flow from it.
4. The adoption in recent years by the construction industry of improved management techniques, building and component technologies, and increased industrialization through e.g. prefabrication; may have had an effect in enhancing construction skill sets and producing a reduction in the prior specific nature of construction trades skills; reinforcing point 1. above.

Unfortunately, and as expected, a set of 45 individual and unique correlations reflects too much surface complexity to offer an immediate and meaningful explanation of why the construction industry should be so uniquely placed, or indeed if there is likely to be a structural change in the pre and post 1995 periods. However, this initial data may be sufficient to use as in a Principle Component Analysis, with suitable buffering for the two identified epochs, in order examine the deeper underlying influences which have contributed to this pattern of sectoral labour mobility.

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